

Preferably two such genes should be used, to have a better change for lasting resistance. The best combination is bc-u, bc-1², bc-2², bc-3 I.

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Differential Reaction of Phaseolus vulgaris Germplasm,
Tolerant To Halo Blight Race 2, To A New Virulent Strain

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A collection of Phaseolus vulgaris germplasm, reported as tolerant to Pseudomonas phaseolicola Race 1 and/or Race 2, was inoculated in the seedling stage in the greenhouse by the watersoaking method (5×10^6 cells/ml) with Race 2 (Nebr HB-16) and a new virulent strains (AL-1) isolated from GN UI-59 in Nebraska. GN Nebr. #1 sel. 27, considered resistant to races 1 and 2 was susceptible to AL-1 including watersoaked (leaves) and systemic chlorosis. PI 150414 had resistant leaves and a nonsystemic chlorosis reaction. This differential response indicates that AL-1 is a new virulent strain. WIS HBR-72 had the highest degree of resistance to both strains. NVBEC and OSU10183 were susceptible to HB-16 but resistant to AL-1. B019, Opal, and dark Red Kidney were the most susceptible varieties. PI 181954, OSU 1604, Redkote, Redcloud, Red Mexican UI-3 showed watersoaked leaves but non-systemic chlorosis to HB-16 and AL-1.

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Xanthomonas Infection Of Seeds Of Tolerant Bean Cultivars

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Internal seed infection with bacterial pathogens among tolerant bean cultivars is of concern to the bean seed industry. Seven Great Northern cultivars (GN Nebraska No. 1, GN UI59, GN Tara, GN 1140, GN Jules, GN Valley, GN Star) and a breeding line (GN Early Valley) were planted in 1978 in a furrow-irrigated commercial field of susceptible GN cultivars in Bayard, Nebraska. A randomized complete block design was used in laying out the field plots and each cultivar row was replicated six times.

The original purpose of the experiment was to make comparative yield trials of the eight bean entries under western Nebraska conditions. Because of the high incidence of bacterial blight, comparative disease evaluations were made of foliage and internal seed infections.

The average foliage disease ratings of field grown tolerant cultivars (GN Valley, GN Star, GN Jules, GN Tara and a breeding line Early Valley) was significantly less (2.1) than for the older established varieties (GN 1140, GN U159, and GN Nebr. #1) which was 4.0.

The average disease (Xanthomonas) rating for the internal infections for the tolerant bean cultivars was 2.5 compared to 3.3 for the older cultivars.

It is known that foliage and stems of tolerant bean cultivars harbor high populations of pathogenic bacteria without exhibiting symptoms. A further complication is that there are differences in reaction of leaves and pods to common and halo blight bacteria. Pod reactions of the tolerant cultivars need to be ascertained so that comparisons can be made between pod and seed infections.

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Studies On Chemical Control of Bean Root Rot In Wisconsin

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Objective

To determine the effacacy of chemical means of controlling root rot of processing beans in Wisconsin.

Methods and Materials

Various chemicals were applied according to manufacturer's recommendations in a field known to contain root rot of bean caused by Pythium sp. at the University of Wisconsin Experimental Farm, Hancock, Wisconsin. Early Gallatin was planted in 20 foot rows at 10 seeds per foot and subjected to various chemical treatments as shown below. A v-belt planter was used to plant pre-treated seeds and for granular application. In-furrow spraying was done by using a hand sprayer calibrated before each treatment. Seeds were hand planted for all in-furrow spraying. Six replications in a random block design were planted for statistical analysis. Disease index ratings of roots based on a scale 0-4* were taken at first blossom and again just prior to harvest. Plants in a 8-10 foot section of each row were harvested by hand; plant number and pod weight per plant were recorded and analyzed for each treatment. The field plot was irrigated regularly with an overhead irrigation system.

Disease Severity Ratings

- *0 = no symptoms apparent; healthy root system and hypocotyl
- 1 = slight root discoloration
- 2 = moderate root discoloration; pruning of root system apparent; hypocotyl damage if present is restricted to base of hypocotyl